

# Saturday Magazine.

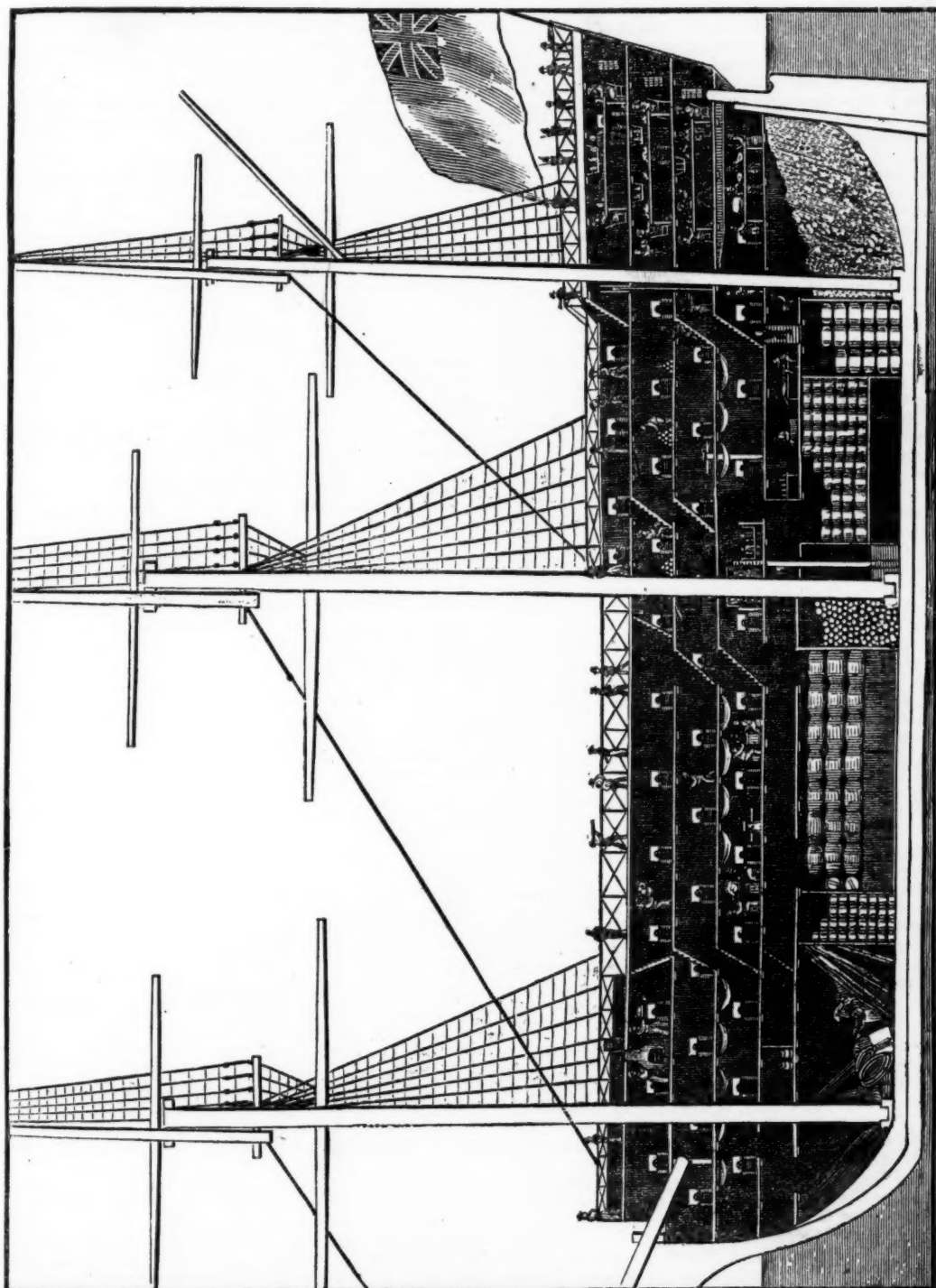
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APPOINTED BY THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE.



SECTION OF A LINE-OF-BATTLE SHIP.

## SOME ACCOUNT OF A SHIP.

### GENERAL OBSERVATIONS.

A SHIP has been justly considered as one of the proudest triumphs of human ingenuity and skill; and, if imposing merely from its size, and the complication of its structure and equipments, how much more so is it when the variety and extent of knowledge which man must have attained, before he could accomplish such a work, are considered. Other arts have arrived at a great degree of perfection in the earlier stages of society, and have even subsequently declined, but Ship-building and Navigation have slowly and steadily advanced. In earlier times, a few trunks of trees, lashed together, afforded a rude means of passage over a river or an estuary; the present civilized nations of the world possess fleets capable of traversing the boundless ocean, and of bearing to their shores the produce of remote countries, or of carrying the means of aggression or defence, when they are unhappily engaged in those wars to which the passions of mankind will ever give rise.

This gradual improvement is a proof of the great intellectual cultivation required in those arts. The physical powers of man have been nearly the same in all ages, and when emancipated from the necessity of building solely for shelter, he very early raised architectural structures, which for grandeur and magnitude have never been equalled; excepting, however, the *taste* manifested in the design, little more than an abundance of labour and time were required for the completion of many of the most magnificent structures. But of naval architecture, it may be truly said, that there is more science, more knowledge of the laws of nature and their effects, shown in the building of the smallest vessel of our times, than ever went to the erection of an Egyptian pyramid or temple; and this knowledge is only gained by degrees; every step in addition being based on all that have preceded it.

It might at first appear, that this assertion was not quite borne out by facts, and that the accounts of enormous ships constructed in ancient days, were proofs that man attained considerable skill in this, as well as other arts, at a comparatively early period. These exceptions, however, are more apparent than real. To that mighty vessel which had the Almighty for its architect, and the second progenitors of mankind for its crew, we do not here of course allude; but such ships as one stated to have been built by Archimedes, and described as having *gardens, mills, baths, stables, and temples* in it; as having the floors inlaid with agates and other precious stones, and its sides adorned with paintings, &c., may be fairly suspected, from the absurd exaggeration of the accounts, either to have had no existence except in the mind of the narrators, or to have been merely unwieldy floating houses, not coming within the definition of a ship in the true meaning of the word. Passing by, therefore, such exceptions as fabulous or exaggerated, it cannot be denied that the arts of Navigation and Ship-building have kept an equal and proportional pace with the improvement of mankind, till they have arrived at their present state of comparative perfection.

A recent visit to one of the largest and finest ships in the British Navy, suggested these reflections, and the consequent subject of this paper, which it is hoped may prove interesting to our readers, though pretending neither to scientific detail of its construction, nor technical description of its parts.

### VARIETIES OF SAILING VESSELS.

THE term *Ship* is only properly given to such vessels as have three masts, and are *square rigged*; that is, having their sails suspended from what are called yards, hung from the masts, and lying, usually, at right angles to the keel or length of the vessel.

A *Boat* is a vessel without a deck, or *open*, and is propelled by oars or by sails; it is of endless variety of size and form, from the small, light, sharp-headed *wherries* of our rivers, to the *Long-boat, Pinnace, and Barge* of a Man of War, capable of carrying thirty or forty seamen, with arms and stores, for a short expedition.

Vessels with an entire or partial deck, and having one mast, and a bowsprit, or mast projecting forward from the head, are termed *Sloops and Cutters*; these carry one large, or main-sail, a top-sail, fore-sail, and jib-sail, all lying nearly in the line of the keel. These sails are larger in

proportion to the body, or *hull*, in the *cutter* than in the *sloop*. The pleasure sailing-boats kept by gentlemen are usually Cutters, and when carrying all their sails in a gentle gale, no vessel can exceed them for beauty to the eye. Sailing Vessels of all kinds, from their general form, that of their sails as swollen by the wind, and the graceful lines of their rigging, are perhaps the only objects of human production which are truly *picturesque* in the artist's sense of the word.

*Brigs* are vessels with two masts, square-rigged, and are familiar to Londoners, from the Colliers, which bring us coals from the North, and lie in numbers in the Pool of London, below the bridge, in almost uninterrupted succession for two miles. When vessels with two masts are not square-rigged, but have their main-sails and fore-sails\* like that of a cutter, they are called *Schooners*, but this species of vessel is very various in its rigging.

Ships are principally distinguished as those called *MERCHANTMEN*, which belong to individuals or companies, and are engaged in commerce; and *MEN-OF-WAR*, or the national ships, built for the purposes of war. The latter receive their designations from the number of their decks, or of the guns which they carry; the largest class are termed *Ships of the Line*, from their forming the *Line of Battle*, when acting together in fleets; and are divided into First Rates, Second Rates, Third Rates, &c. *First Rates* include all those carrying 100 guns and upwards, with a company of 850 men and upwards; *Second Rates* mount 90 to 100 guns, and their complement or crew, is from 650 to 700 men; *Third Rates* have from 60 to 80 guns, and from 600 to 650 men, and so on, down to *Sixth Rates*†; but some ships of less than 44 guns, are termed *Frigates*, a name which is also given to others carrying a greater number of guns, the distinction depending on the form and arrangement of the vessel.

### VISIT TO A FIRST RATE LINE-OF-BATTLE SHIP.

THE effect on the mind, when approaching, in a small boat, a ship of 120 guns, is an excellent preparation for the rapid succession of new and striking ideas, which crowd upon the imagination in viewing it.

On our first approach, we looked up with wonder to the vast hull which towered above the water, and whose sides seemed swelling out ready to overwhelm us. The graceful lines of the joints of the planks, as seen in perspective diminishing in width from distance; the formidable muzzles of the triple *battery* of guns, standing out of the port-holes, with the stout ports which shut the openings overshadowing them; the enormous cables of iron by which she was moored, the gigantic sheet and spare anchors, slung outside the fore-channels; the boats hanging from the

\* These terms will be subsequently explained; the reader must take them at present as mere names.

† The following is a list of the titles and numbers of the crew of a first-rate ship, classed in the order of their amount of pay:—

Captain . . . . .	1	Brought forward. 91	Brought forward. 656
Lieutenants . . . . .	8	Caulker . . . . .	1
Master . . . . .	1	Armourer . . . . .	1
Chaplain . . . . .	1	Capt. of Maintop 3	Steward's Mate . 1
Surgeon . . . . .	1	Foretop 3	Landsman . . . . 1
Purser . . . . .	1	Mast . . . . .	Boys . . . . . 31
Second Master . . .	1	After Guard 3	Total Seamen . 690
Assistant Surgeons 3		Yeomen of Signals 1	
Gunner . . . . .	1	Coxswain of Pin- 1	Capt. of Marines . 1
Boatswain . . . . .	1	nace . . . . .	Lieutenants . . . . 3
Carpenter . . . . .	1	Sail Maker's Mate 1	Serjeants . . . . . 4
Mate . . . . .	1	Caulker's Mate . 1	Corporals . . . . . 4
Midshipmen . . . .	23	Armourer's Mates 2	Drummers . . . . . 2
Master's Assistants 6		Cooper . . . . .	Privates . . . . . 146
Schoolmaster . . . .	1	Volunteers . . . . 12	
Clerk . . . . .	1	Gunner's Crew . 25	Total war com- 850
Master-at-Arms . .	1	Carpenter's do. . 18	plement of offi- cers, seamen, and marines.
Ship's Corporals . .	2	Sail Maker's do. . 2	
Captain's Coxswain 1		Cooper's do. . . . 2	
Launch ditto . . . .	1	Yeomen of Store- 2	
Quartermasters . .	12	Room . . . . .	In 2nd Rates . . 675
Gunner's Mates . . .	5	Able Seamen . . .	3rd Do. . . . . 625
Boatswain's Mates 8		Ordinary do. . .	4th Do. . . . . 400
Capt. of Forecastle 3		Cook's Mate . . . 1	5th Do. . . . . 290
Hold . . . . .	1	Barber . . . . .	6th Do. . . . . 140
Ship's Cook . . . .	1	Purser's Steward 1	
Sail Maker . . . . .	1	Captain's do. . . . 1	Many of these offi- cers and subalterns are not appointed to the 3d, 4th, 5th, and 6th Rates.
Rope Maker . . . .	1	Cook . . . . .	
Carpenter's Mates 2		Ward-room do. . . 1	
	91		656

*davits*; the diminished figures of the marines and sailors looking over the sides; with the shrouds, masts and rigging, appearing as a back-ground above them, at an immeasurable height, which fatigued the eye to look up to; all together formed such a picture as never is effaced from the memory, when seen for a first or only time.

No sooner had the officer, for whom we had a letter of introduction, obtained permission of the lieutenant of the watch for our admission, than he appeared at the head of the "accommodation ladder," (which is attached to the sides of ships when lying at anchor in port,) and invited us to mount. Many a suppressed smile was visible on the bronzed features of the seamen who assisted us, provoked at the awkwardness of a landsman in reaching the decks, even by this easy mode of ascent; but the first moral lesson we learnt, was, that every one connected with such a vessel seemed to have the more ill-natured part of his feelings subdued. This is one of the results of discipline and instruction. The lowest seaman scarcely suppressed a laugh at our ignorance, but it *was* suppressed, and he showed as considerate an attention to our wants and curiosity, as the first officer in the ship could do, with his more refined and gentleman-like deportment.

On reaching the top of the temporary staircase, we passed through a door, termed the *entrance-port*, on to the middle gun-deck, and great was our astonishment at the scene which it presented. The long vista between decks, increased by the comparative lowness of the ceiling; the scrupulous order in which every thing was arranged; the guns on their carriages, with all the apparatus required in their use; the mess-tables of the sailors which alternated with them, each distinguished by some little peculiarity, indicative of the dispositions of the gallant men who fed at them; the various hatchways leading to the upper and lower decks, each bordered by a frame pierced with circular holes, which, though now empty, sufficiently showed their destination, that of repositories for the shot to be used in the cannon; the massive capstans, with the messenger wound round them; the masts, passing through, and the numerous posts, called stanchions, supporting the upper deck; the view down to the lower decks, or through the upper hatchways, to the bright and dazzling sky, with the complicated rigging stretched between the masts, as obscurely seen from such a distance; the varied sounds necessarily occasioned by the fulfilment of their regular duty; the shrill whistle of the Boatswain summoning a watch, or calling the guard of honour to attend at the gangway, on the coming or going of a superior officer; crowded in succession on the senses, till we felt dazzled and bewildered by the novelty and multiplicity of the objects before us.

We were invited to follow the officer to the Ward-Room, at the after-part of the deck\*. This apartment, which is the mess-room of the lieutenants, and other commissioned officers, was fitted up with all the convenience of a sitting-room for gentlemen. A handsome wainscot table and side-board, with chairs, would have assimilated it to a room in a house, if the attention had not been re-

\* The terms *fore* and *aft*, express the relative situation of any things as they lie with respect to the head and stern of a ship; that which is nearest the former is said to be *forward*, a person is said to go *forward* or *aft*, as he goes towards the head or stern.

There are a few other terms expressive of the relative situation of parts of a ship, or other objects, as referred to it, which from their frequent occurrence in all naval writings, it may be worth while to explain to the reader. When a person at the *stern* looks towards the *head* of a ship, the right side of the vessel is termed *Starboard* and the left *Larboard*; but, from the similarity of the sound of these words, fatal errors might occur if they were used in giving the directions to the steersman, or man at the wheel, who might mistake one for the other; consequently, instead of the latter, the term *Port* is always used, thus "Port the helm" is given out, instead of "Larboard the helm."

Another vessel or object at sea is said to be *on the beam* when it is in a line perpendicular to the keel. It is said to be *on the bow* when it is in the part of the horizon comprehended between the point towards which the ship itself is steering and an arch of forty-five degrees, or one half of a right angle. And it is said to be *on the quarter*, when in a corresponding arch, referred to the stern. If the object is seen in that arch of the horizon between "on the beam and the bow," it is said to be *before the beam*, and *aboard the beam* when seen between the beam and the quarter.

The half of the horizon towards which the wind blows is called the *lee*; consequently that side of the ship which is sheltered by the sails, or farthest from the wind, is called the *lee side*, and the other is termed the *weather side*. Thus a ship is said to be *on a lee shore*, when she is near the shore, with a wind blowing directly towards it. It is *on lee shores* that shipwrecks most frequently occur, because to escape being driven on shore, the ship must advance against the wind, or nearer the wind than is often possible.

called to the locality, by the appearance, on all sides, of the peculiarities of a ship. Thus, the decanters and glasses, instead of standing on the side-board, were placed in holes cut to fit them, in shelves round the recess, to obviate the confusion which a roll of the vessel would cause among them; the partitions which shut in the *berths* (or sleeping places) of the officers, on each side, were fixed to the ceiling by hinges, to allow of their being slung up out of the way during an engagement, so as to lay the whole length of the deck into one. This is one of the numberless improvements which have taken place gradually in naval architecture. Formerly, these partitions, or *bulk-heads*, as they are technically termed, were fixtures, and when the vessel was cleared for action, the carpenters went round to knock them away, and they had to be re-erected after the termination of an engagement. Our conductor showed us his berth, which was the smallest apartment in which a person could possibly contrive to rest, and the space was accordingly husbanded with that skill and neatness, which none are more perfect in than sailors. The dress-sword, a flute, a glazed drawing of a portrait, a few books, and many other trifles, spoke of the habits, rank, and feelings of an officer, while the very short and narrow couch was greatly encroached upon by a huge gun, with its carriage and furniture.

#### THE DECKS\*.

In first and second-rate ships there are three complete decks, reaching from stem to stern; and below these there is yet another called the *Orlop Deck*, on which are laid the cables and other cordage for stores; on this deck are also situated the sail-room, the purser's, surgeon's, boatswain's, and carpenter's berths, the cock-pit where the wounded are dressed, and where the midshipmen mess, and the several officers' store-rooms. Below the orlop deck is the *Hold*, as the whole cavity above the keel, under the orlop, is termed. In Merchantmen this is the place wherein the cargo is stowed, and in such vessels the whole of the hull is so built as to allow of the greatest possible space being devoted to this object; but in all ships the hold is the situation for the ballast, the provisions, and stores; and it is divided for this purpose by *bulk-heads* into various rooms, called, accordingly, the Bread Room, the Spirit Room, &c. In ships of war, the Magazine, or Powder Room, is also placed here. The care taken for the security of this important place struck us much, as no lighted lamp of any kind can be allowed within it; the partitions enclosing it at each end are furnished with double-glazed windows, behind which are placed in the Light-rooms, as they are hence called, lanterns with polished reflectors and powerful lenses (or magnifying glasses), which throw a strong light into the Powder Room, to enable the person appointed to that duty to charge the cartridges and to give out the powder. No particle of iron is allowed within-side, and every other precaution is taken with the same view to security. The Bread Room affords a pleasing contrast to the magazine;—the cleanliness, order, and the care taken of the ventilation, indicate the importance of the contents. Flour and biscuit, but chiefly the latter, is the form in which bread is taken to sea. This apartment is at the

\* In the SECTION OF A SHIP, prefixed to this paper, an attempt is made to convey a popular view of the interior arrangement of a ship, and of the relative situations of the cabins, the divisions of the decks, and the communications between them. The insertion of the masts is correctly represented, and the spaces between the decks are in strict proportion to the length of the vessel. This view must necessarily be very imperfect, but with the following explanation, it may assist the reader in forming a general idea of the arrangement of a ship, and will give additional interest to the description contained in the text.

The first mast on the left-hand, is the foremast, that in the middle, the mainmast, and that to the right-hand, the mizenmast. It will be seen that the vessel is divided into six ranges. On the first, extending on each side of the foremast, is the fore-castle, and next to it, between the foremast and mainmast, are the waist and gangway; between the main and mizenmasts, is the quarter-deck, and to the right of the mizenmast, is the captain's cabin, above which is the poop with marines upon it. The second range is the main-deck, at the left end of which is the sick-ward, and next to it the galley, or cook's room: at the right end, beneath the captain's cabin, is the admiral's cabin. The third range is the middle-deck, at the right end of which is the ward-room. On the fourth range or lower deck, are seen some of the sailors at mess, hammocks slung to the beams, the pump with men working it, and to the right, the gun-room. The fifth range is the orlop-deck, on which, between the main and mizenmasts, is the cockpit, or surgeon's room, denoted by a figure lying upon a table. The sixth range is the hold, which exhibits in separate divisions, beginning at the left-hand, the boatswain's and carpenter's stores, the powder-magazine, the water-tanks and water-casks above them, the shot, the well of the pump, the salt provisions in barrels, the wine and spirits, and the bread.





A LINE-OF-BATTLE SHIP, AND A MERCHANT BRIG ALONGSIDE.

aftmost part, and is of two stories, or occupies the height of the hold and the orlop deck.

The Lower Deck, besides various objects which occur also on the middle-deck, was distinguished by the principal or Main Capstan, situated in about its mid-length. This is a large conical piece of timber, the lower point turning on a socket in the orlop, so as to afford the greatest resistance to the enormous weights it is employed to raise. There is another Capstan on the middle deck, used for lighter weights of many kinds.

The capstans are turned by means of long bars inserted horizontally into holes in the upper part; several men push against these, and turn the capstan round by that means, so that a rope or cable is wound round on it: the length of the capstan bars enables the men, by the advantage of this purchase, to raise the enormous weight and resistance of the anchor; and when it is recollected, that the "best bower," of ninety hundred weight, has often to be dragged out of a muddy anchorage, some idea may be formed of the immense power demanded; it accordingly requires the simultaneous effort of sixty or eighty men, who "man the capstan," to effect it: a drum and fife play a lively air to encourage them in their exertions, and to time their efforts.

Little further remains to be noticed on this deck except the GALLEY, as the Kitchen of a man-of-war is called. An immense boiler, big enough for a steam-engine, with furnaces, coppers, and other conveniences, sufficiently characterized the spot. At the time of our visit, the Cook and his Mates were busy in preparing this caldron full of soup for the dinner of the crew.

The Upper Deck differs from the two beneath it, in being open to the sky in the centre, or in what is called the WAIST. The forward part of the ship has the FORECASTLE, another partial deck above the main one, and the after part has also a deck over it, called the QUARTER DECK; the space between these two is termed the Waist, and a narrow passage on each side of the vessel, commu-

nicating from the Quarter-deck to the Forecastle, are called the Gangways. These have a stout double netting, stretched between iron rails on the outside, between which are stowed the seamen's hammocks\* during the day and before an engagement, when they form a very secure protection to the crew against the musketry of an enemy. A similar breast-work of rails guards the Forecastle, Quarter-deck, and Poop. The Forecastle is the part of the ship which properly appertains to the best or able seamen, as the Quarter-deck does to the officers†. These two half-decks are ascended by stairs or ladders from the main deck. Under the quarter-deck, at the after part of the upper deck, is the ADMIRAL'S STATE-CABIN, which is, therefore, immediately over the Ward Room, and bears the same relation to this in its arrangements and fitting up, that the Admiral or Captain, to whom it is appropriated, bears to the Lieutenants. Handsome sofas

\* Hammock is the name of the bed of the seaman. It consists of a piece of canvas, five feet long by two wide, suspended to the deck overhead by means of two sets of small lines, called *clews*, made fast to rings of rope, which again are attached by a lanyard, or short rope, to battens fixed to the beams of the deck (see the Engraving). In this sacking are placed a small mattress, a pillow, and a couple of blankets, to which a pair of sheets may or may not be added. These hammocks, when suspended, occupy less than eighteen inches in width, and touch one another, and in many places where they are put, the occupant has no more than a foot between his face as he lies in them, and the beams of the deck above him. Every sailor has two hammocks, one of which is slung and in use, the other scrubbed, dry, and stowed away, ready to be exchanged for the dirty one.

† "Every person, not excepting the captain, when he comes on the quarter-deck, touches his hat; and as this salutation is supposed to be paid to this privileged spot itself, all those who, at the moment, have the honour to be upon it, are bound to acknowledge the compliment. Thus, even when a midshipman comes up and takes off his hat, all the officers who are walking the deck, the admiral included, if he happens to be of the number, touch their hats likewise."—HALL'S Fragments.

and tables, a carpet and other luxuries, would rank it with a drawing-room; but the same sacrifice, if such it can be called, to the main object of the ship, occurs here as every where else, two or more enormous guns occupied their posts at the windows, and though their carriages were a little more neatly finished and painted, and their apparatus kept more out of view, yet it was obvious that they were not there for show, and that when stern war called for their employment, they would be manned as promptly, and worked as steadily, as any others in the ship. The State Room is also the dining-room where the various officers dine with the captain, but only when invited so to do; for the strictest form and etiquette is observed on board of a ship of war. The officer who visited his commander by invitation, without being as scrupulously dressed as if going into the company of ladies, would, if not subjected to a severe reproof for his negligence, certainly not be invited again.

On the after-part of the Quarter Deck there is raised another deck, called the Poop, which contains the captain's sleeping-room, and some others. There are small ladder-stairs on each side from the Quarter Deck to the Poop, and between these is the WHEEL, by which the motion of the rudder is produced in steering or governing the course of the vessel. The Rudder turns on hinges attached to the STERN POST, in the middle of the stern of the vessel, and under the lower row of windows which light the Ward Room. A horizontal beam, the TILLER, fixed to the top of the Rudder, and of considerable length, has ropes at its extremity, which pass through *Blocks*, or pulleys, at the sides of the vessel, and are then wound round the barrel of the wheel in contrary directions; when, therefore, this is turned either way, it draws the Tiller towards the sides of the ship, and, therefore, turns the Rudder in the contrary direction.

Just before the wheel is the BINACLE, containing the COMPASS. This is a box, open at the side next the wheel, having the Compass hung in it, so as to remain horizontal however much the ship may lie on one side, or roll on the swell of a sea. There are lights to illuminate the Compass at night.

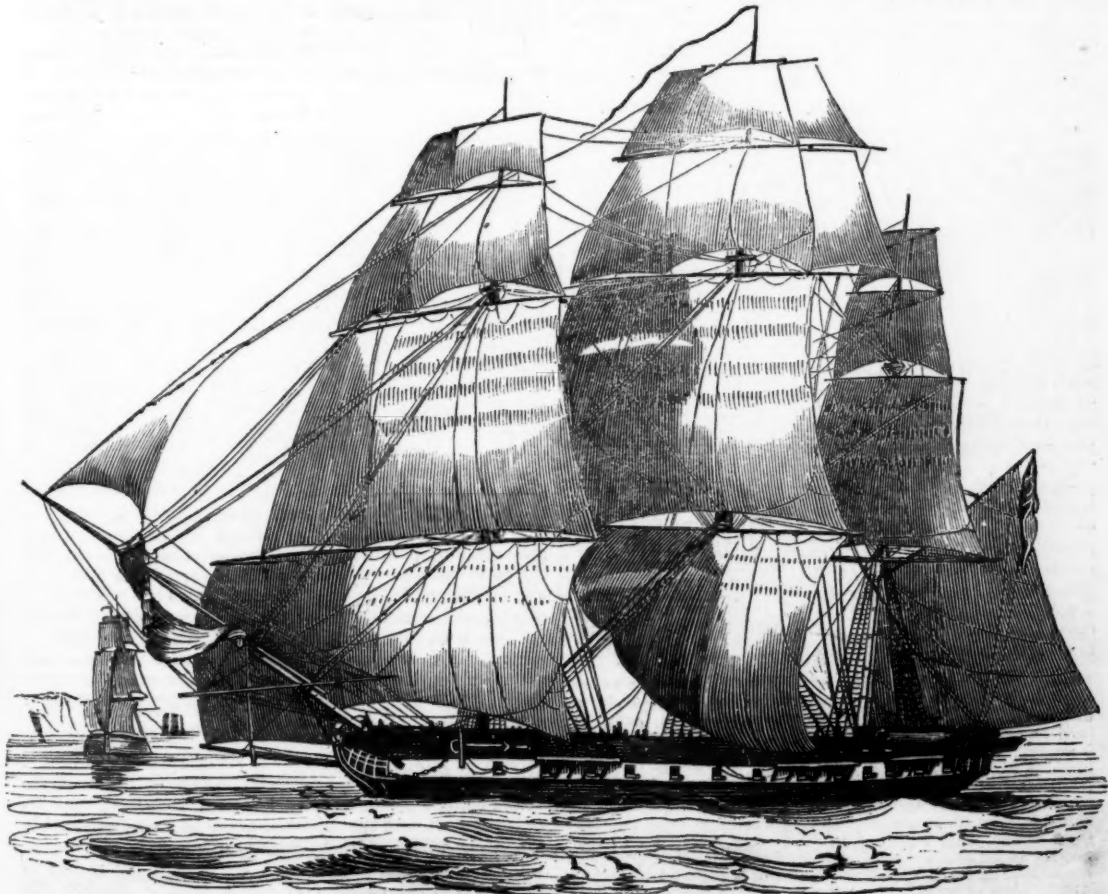
In large ships, especially of war, there are two binacles and compasses, at one of which a "quarter master" is stationed, who gives the proper directions for steering to the man at the wheel; this is called *Conning*. The helmsman or sailor who governs the *wheel*, keeps his eye on the binacle, and regulates his proceeding accordingly.

At the middle of the TAFFAREL, or top rail of the stern, on the Poop, was an apparatus for the succour of sailors who accidentally fell overboard. If this accident happens when a ship is going at a great rate, the impetus of the vessel, and the time requisite for effecting the manœuvres necessary to bring her round, carry her to so great a distance, that the unfortunate man would be exhausted before a boat could arrive to his assistance. The apparatus is for instantly dropping into the water two hollow thin copper vessels joined together, with an iron bar attached to them, so contrived that this would stand upright while the vessels floated, and enable a man to support himself by it till assistance could be rendered. In order to guide both the man and the boat to the same spot, if the accident occurred at night, a port-fire is fixed to the top of the bar, and is lighted by a gun-lock, discharged by the same contrivance which lets the instrument drop, at the moment it is detached from the ship; thus converting the copper balls into a floating beacon, whereby the sufferer is guided to immediate support, and which at the same time serves to point out the spot whither the boat, which is immediately lowered, is to row in order to pick him up. No sooner was the efficacy of this humane and ingenious invention substantiated, than Government ordered all its ships to be provided with the apparatus, and thus many lives will be saved, which formerly might, in such circumstances, have been lost.

#### THE MASTS AND RIGGING.

EACH of the three Masts\* are round timbers, composed of several pieces, kept together by iron hoops, the lower ends

\* The total length of the main-mast of a 74-gun ship, from the heel on the keelson of the ship to its head, is 113 feet! the top-mast rises 48 feet above this, and the top-gallant again 42 feet above the top-mast; so that, deducting the depth of the vessel, the whole mast rises full 170 feet above the deck! The reader may form some idea of what the altitude of the mast of a 120-gun ship must be.



A FRIGATE UNDER PRESS OF SAIL.

being fixed to the keel of the ship, and passing through all the decks to a considerable height above them; an upper mast, much smaller, called the **TOP-MAST**, passes through a frame fixed to the top, or *head* of the lower mast, so that it is not in the same line with, but a little before it; this, rising to a still greater elevation, is succeeded by a third, called the **TOP-GALLANT-MAST**. The lower, or principal mast, is kept upright and firm by twelve, or more, strong ropes, proceeding from the top on each side, spread out at the bottom, and fixed to a broad stout plank, called the **CHANNEL**, or *Chain-wale*, which stands out horizontally on each side of the ship. This is secured by long and powerful links, called the **CHAINS**, bolted to the sides, and passing through notches in the edge of the *Channel*; each of the ropes has a **DEAD-EYE**, or block of wood, resembling in form a true block\*, or pulley, at the end, and the upper extremity of each chain has another; a rope passes many times through three holes in each dead-eye, by which the ropes are stretched as tight as possible, and the **LANIARD**, as the mass of smaller rope is termed, is then secured. These twelve ropes on each side of the mast are termed **SHROUDS**, and these are converted by means of lines, called *ratlines*, into rope-ladders, by which the sailors ascend to the top of the masts. A frame of timber, called the *Top*, stands out horizontally at the head of the mast, to serve the same purpose as the channels, for fixing the lower ends of the shrouds which steady the top-mast, but these top shrouds are not nearly so numerous as the principal ones. Besides these, single ropes, called **BACKSTAYS**, are brought from the heads of the top and top-gallant-masts, *aft* of the shrouds, to the sides, for the purpose of steadying further these upper masts; but as all these only tend to keep the mast from falling sideways either way, strong ropes, called **STAYS**, are brought from the upper part of the masts to the lower part of the mast next before it.

The mast nearest the head or stem of the ship is called the **FOREMAST**; and its parts, and all the sails and rigging belonging to it, are named from the mast: thus, the *Fore-chains*, *Fore-shrouds*, *Fore-top-mast*, *Fore-top-gallant-mast*, and so on, serve to distinguish these from the corresponding portions of the others. The middle mast is called the **MAIN-MAST**, being the largest and loftiest of all; its upper masts, &c., are termed *Main-top-mast*, *Main-channels*, *Main-shrouds*, and so on; and the aftermost mast is the **MIZEN**, with its *Shrouds*, &c.

From the top of each of the three parts composing the three great masts is suspended, horizontally, a **YARD**, or round bar, tapering to each end, to which the sails are attached. These yards are of very different lengths, the largest, the **MAIN-YARD**, being, in a first-rate, more than one hundred feet long! and two feet three inches in diameter in the middle; the *Main-top-gallant yard* about fifty feet long, and ten inches in diameter.

According as the wind blows from different points, in regard to the course the ship is sailing, it is necessary that the direction of the yards should be changed, so as to form different angles with the central line, or with the keel. This is effected by ropes, brought from the ends of the *yards* to the mast behind that to which these belong, and then, passing through blocks, they come down to the deck; by pulling one of these, the other being slackened, the yard is brought round to the proper degree of inclination; this is termed *bracing the yards*, the ropes being called *braces*.

Besides the three upright masts above enumerated, there is one projecting forward at the head of the vessel, inclined at an angle to the deck, called the **BOWSPRIT**; this is also prolonged by a thinner, called the **JIB-BOOM**, and occasionally by a third, the **FLYING-JIB-BOOM**, in an analogous manner as the masts are continued by the top-masts. There are two, sometimes three, yards hung perpendicular to the *Bowsprit*, and horizontally like the rest; the lower one, or that nearest the ship, is termed the **Spritsail**-

yard, the next the **Sprit-topsail-yard**, and the furthest the **Spritsail-top-gallant-yard**.

### THE SAILS.

THERE are few things relating to naval affairs which more astonish a person, not conversant with them, than the number and size of the sails which a ship, or, indeed, any vessel, can *carry*; that is to say, can sail with, without danger of being upset. This is not so striking in a three-decker as in smaller vessels, because the hull of the former stands very high out of the water, for the sake of its triple rank of guns, and, therefore, bears a greater proportion to its canvas than that of a frigate or a smaller vessel. Perhaps this circumstance is most surprising in the smallest vessels, as cutters; of those kept for pleasure, and therefore built for the purpose of sailing as fast as possible, without reference to freight or load, there are many the hull of which might be entirely wrapt up in the main-sail.

It is, of course, very rarely, if ever, that a vessel carries at one time all the sail she is capable of; the reason of such a multiplicity is, that different sails may be employed, according to the circumstances of direction, of wind, and course. The sails of a ship, when complete, comprise the following. The lowermost sail of the mast, called from this the *mainsail*, or *foresail*; the topsail, carried by the *top-sail-yard*; the top-gallant-sail, and above this there is also set a *royal* sail, and again above this, but only on emergencies, a sail significantly called a *sky-scraper*. Besides all this, the three lowermost of these are capable of having their surface, to be exposed to the wind, increased by means of *studding* sails, which are narrow sails, set on each side beyond the regular one, by means of small *booms* or yards, which can be slid out so as to extend the lower yards and top-sail yards; the upper parts of these additional sails hang from small yards suspended from the principal ones, and the boom of the lower studding-sails is hooked on to the chains. Thus each of the two principal masts, the fore and main, are capable of bearing no less than thirteen distinct sails. If a ship could be imagined as cut through by a plane, at right angles to the keel, close to the main-mast, the *area*, or surface, of all the sails on this would be five or six times as great as that of the section or profile of the hull!

In our cut of the frigate, the starboard studding-sails are easily recognised on the fore-mast, and on both sides of the main-top gallant and main-royal; but as she is shown going nearly before a wind, there would be no advantage derived from the stay-sails, which, accordingly, are not set. The flying-jib is, apparently, set to assist in steadying the motion; but we rather think the first-lieutenant is just ordering some more "light duck" to be spread, to catch every breath of the favourable gale.

The mizen mast, instead of a lower square sail like the two others, has a sail like that of a cutter, lying in the plane of the keel, its bottom stretched on a boom, which extends far over the Taffarel, and the upper edge carried by a *Gaff* or yard sloping upwards, supported by ropes from the top of the mizen-mast.

All these sails, the skyscrapers excepted, have four sides, as have also the sprit sails on the bowsprit, jib-boom, &c., and all except the sail last mentioned on the mizen, usually lie across the ship, or in planes forming considerable angles with the axis or central line of the ship. There are a number of sails which lie in the same plane with the keel, being attached to the various *stays* of the masts; these are triangular sails, and those are called *stay* sails, which are between the masts; those before the foremast, and connected with the bowsprit, are the *fore stay-sail*, the *fore-top-mast-stay-sail*, the *jib*, sometimes a *flying jib*, and another called a *middle jib*, and there are two or three others used occasionally. Thus it appears that there are no less than fifty-three different sails, which are used at times, though, we believe, seldom more than twenty are set at one time, for it is obviously useless to extend or set a sail, if the wind is prevented from filling it by another which intercepts the current of air.

The higher the wind, the fewer the sails which a ship can carry; but as a certain number or rather quantity, of canvas is necessary in different parts of the ship to allow of the vessel being steered, the principal sails, that is, the *courses* or lower sails, and the top-sails, admit of being reduced in extent by what is termed *reefing*; this is done by tying up the upper part of the sail to the yard by means of rows of strings called *reef-points* passing through the canvas. This reduces the depth of the sail, while its width

\* To facilitate the action and increase the power of the various ropes, these pass over pulleys enclosed in oval blocks of wood, hence thus named; a strap of cord or iron passes round the frame, and carries a hook, by which the block can be hung or fixed wherever it is wanted; the running or moving rope passes through a slit in the block, in which the pulley or sheave is fixed, and by working in this, friction is diminished, and the force of the men pulling the rope is more advantageously applied. The immense number of blocks required in ships (there are nineteen on the main-yard alone) caused the invention, many years ago, by Mr. Brunel, the celebrated engineer, of a most beautiful set of machines for their construction, which are in Portsmouth Dockyard: these machines perfect a block from a rough piece of wood without the necessity of any, or very little, manual labour.



is unaltered on the yard, which is therefore obliged to be lowered on the mast accordingly.

Our engravings of a Line-of-Battle Ship, showing the masts and yards, and of a Frigate under a press of sail, are copied from Mr. Cooke's work on Shipping, consisting of fifty beautiful plates, in which the various descriptions of vessels are accurately delineated.

#### THE ANCHORS.

ANOTHER important part of a ship's stores must be noticed here, the ANCHORS, of which a Man-of-War and all large ships have several; the largest, the Sheet and Best Bower, weigh four and a half tons, or ninety hundred-weight. The immense importance of the anchor, the safety of the vessel often depending on it, requires that it should be very well made, and of the best materials; if the shank or main bar were cast of one piece of iron, it would be liable to have flaws or defects, which, however sound it might appear, would cause it to break when severely strained. To obviate this, the shank is formed of many different bars of the very best iron placed regularly, and so formed as to compose a cylinder; these are welded together by enormous hammers worked by machinery, and the shank thus produced is far more sound than if made in any other way.

#### DIMENSIONS AND WEIGHT OF A SHIP OF WAR.

THE following are the principal dimensions of a first-rate line-of-battle ship, visited for the purposes of this account:—

	Fect.	In.
Length of the lower gun-deck . . . . .	205	6
— keel, for tonnage . . . . .	170	6
Width at the widest part . . . . .	54	6
Depth of the hold . . . . .	23	2
Height of figure at the head, from the keel . . . . .	56	6
— in the midships . . . . .	50	6
— of the taffarel . . . . .	64	2
Burden in tons . . . . .	2700*	

This enormous ship was armed as follows:—

On the lower deck there were . . . . .	30	32-pounders
On the middle deck . . . . .	2	68-(carronades)†
On the main-deck . . . . .	34	32-pounders
On the quarter-deck . . . . .	2	18-pounders
On the fore-castle . . . . .	14	32-(carronades)
	2	18-pounders
	2	32-(carronades)
Guns . . . . .	120	

#### DISCIPLINE ON SHIP-BOARD.

NOT a step can be taken in the examination of a ship, without the necessity for the strictest discipline being apparent. It must not be supposed that discipline means harshness and severity on the part of the captain and his officers towards the crew; it is well known that the commanders who are most strict in the proper exaction of the fulfilment of duty on the part of those under their command, are often the greatest favourites with their men. CAPTAIN BASIL HALL, in his excellent work, entitled *Fragments of Voyages and Travels*, has dwelt much on this topic, and has illustrated the mutual advantages of discipline, and the evils resulting from its abuse, in two admirable stories, of which we will give a brief abstract, as conveying a beautiful moral lesson.

His majesty's ship *Atalanta*, commanded by Captain Hickey, in November, 1813, was standing in for Halifax

\* The tonnage of a ship means the weight in merchandise, stores, &c. &c., it can carry, and has no relation to the weight of the vessel itself, which is, probably, with all its equipment and crew in it, three times that weight. In order to give some idea of the real weight of a ship, with its stores, &c., we subjoin the following table of a 74-gun ship.

	Tons.	Cwt.	Lbs.
Hull . . . . .	1390	6	20
Rigging . . . . .	192	2	92
Artillery . . . . .	211	12	83
Carpenter's, Gunner's, and Boatswain's Stores . . . . .	21	5	0
Ballast, iron and shingle . . . . .	300	0	0
600 men and officers, and effects . . . . .	95	0	0
Six months' provisions . . . . .	600	0	0
Total . . . . .	2810	6	83

And the quantity of water this weight will displace, when floating, is 97,800 cubic feet!

† A carronade is a particular species of cannon, with a larger bore, and much shorter and lighter than the ordinary guns, though they carry a heavier ball: they are more and more used in the navy. The name is derived from the Carron foundries, in Scotland, where they were first cast:

Harbour, in one of the thick fogs so frequent on that coast, when it unhappily mistook the signal guns of another vessel in the same situation for those which are fired during such weather from Sambo rock, as guides to ships entering the harbour; the consequence was, that the *Atalanta* struck on the rocks, and the first blow carried away the rudder, half the stern-post, together with great part of the false keel, and, it is believed, a portion of the bottom. The ship instantly filled with water, and was buoyed up merely by the empty casks, till the decks and sides were burst and riven asunder by the waves. The captain, who, throughout, continued as composed as if nothing remarkable had occurred, then ordered the guns to be thrown overboard; but before this could be even attempted, the ship fell over so much, that the men could not stand. In lowering the boats, for the crew to take to one, the jolly-boat was lost. The ship was now fast falling over on her beam-ends, and directions were given to cut away the masts; but the crash caused the ship to part in two, and a few seconds afterwards she again broke right across, between the fore and main masts. A considerable crowd of men had got into the pinnace (a boat), in hopes that she might float as the ship sunk; but the captain, seeing that the boat was over-loaded, desired some twenty men to quit her; and his orders were as promptly obeyed as they were coolly given, so completely was discipline maintained by the character of the commander and consequent confidence of the crew. The pinnace then floated, but was immediately upset by a sea; the people in her, however, imitating the conduct of their captain, retained their self-possession, and by great exertions righted the boat, and got her clear of the wreck, where, at a little distance off, they waited further orders from their captain, who, with forty men, still clung to the remains of the vessel. It was now, however, absolutely necessary to quit it, as the wreck was disappearing rapidly; and in order to enable the boats to contain them, the men, as removed to the pinnace, were laid flat in the bottom, like herrings in a cask, while the small boats returned to pick off the rest, which was at last accomplished with great difficulty; but except the despatches, which had been secured by the captain from the first, and a chronometer, every thing on board was lost.

The pinnace now contained eighty persons, the cutter forty-two, and the gig eighteen, with which load they barely floated, the captain being the very last person to quit the wreck of the ship, and hardly had he got into the boat, than the last fragments disappeared, accompanied by three hearty cheers from the gallant crew. The fog continued as dense as ever, and they had no means of knowing in which direction to proceed, and if it had not been for a small compass which one man had appended to his watch, for a toy, it is most probable that they would not yet have been preserved; at last they were all landed in safety, about twenty miles from Halifax, nearly naked, wet through and shivering, and miserably cramped by the close crowding in the boats. The captain took the worst provided, and the most fatigued, round to the harbour in the boats, and the rest, under the officers, marched across the country in three divisions, with as much regularity as if going well-appointed on some regular expedition, though very few had any shoes, and they had to traverse a country only partially cleared; and the same evening, the whole crew, without one missing, officers, men and boys, assembled at Halifax in as exact order, as if their ship had met with no accident.

The second story is tragically different, and presents one of the most striking pictures of passive courage ever presented to the contemplation. A captain of a ship of war, whose sole object of ambition was to distinguish himself by capturing an enemy's vessel, conceived that his surest mode of obtaining the fulfilment of his wishes was by disciplining his crew so strictly, that in the event of an engagement he would be sure of victory by his superiority in this respect; but in order to obtain this, he harassed his crew by such strict regulations, such constant and unremitting exertions, and such excessive severity, as to alienate all affection, and to bring his crew to the verge of insubordination. The day at length arrived when his expectations seemed about to be realized: a strange sail appeared in sight, which was soon made out to be an enemy. He summoned his crew, and addressed them in an energetic speech; reminding them of their duty and of the glory which awaited them he gave orders to clear for action, and was instantly and scrupulously obeyed: but the hour of retribution was at hand; his crew knew of his

ambition, knew it to be the source of their suffering, and determined to be revenged in the fullest manner. Their own spirit forbade them to do anything cowardly or mean, but they stood to their guns, and when the enemy began the engagement, they kept their places, and refused to return a shot; in vain their commander and his officers reproached, exhorted, supplicated; with their arms folded they awaited their fate, nor flinched while broadside after broadside struck them down: the battle, or rather the attack, was soon over, the enemy, surprised at the non-resistance, boarded the English vessel, and found the officers and their crew nearly all destroyed. The captain lived long enough to feel the bitter anguish of disappointment, and to be conscious of having been the cause; but he fell at last, before the vessel was taken possession of.

#### INSPECTION OF A SHIP, AND CHURCH SERVICE ON BOARD.

WE shall now give our readers some idea of the routine on board a man-of-war, for it may be easily supposed that the discipline so essential to the fulfilment of their arduous duties, and those habits, without which so large a body of men could not be kept in health, both of mind and body, are only attainable by the strictest regularity and order: and as it is the moral picture of a seaman's life which we wish to present, and not the technical enumeration of his professional duties, we shall describe a Sunday morning; avowing, that we are again entirely indebted to Captain Hall's *Fragments of Voyages* for our account.

Every captain in the navy takes care that the Sabbath shall be one to his crew, as far as is consistent with the management of the vessel; at all events, that no unnecessary labour shall interfere with the performance of divine service. This day also is chosen for a personal examination of all his men by the commander, to enable him to judge of their health and appearance, and to hear and redress any complaints they may have to make.

Few landmen can form any idea of the fastidious cleanliness in which every part of a ship is kept; no floor of a palace is so white, no parlour of a lady is so neat, as the decks of a man-of-war on the Sunday morning. The planks, which are scoured and swept every day of the week, receive a double portion of washing on Saturday: at seven o'clock the "hammocks are piped up," when each man brings up his bed scrupulously folded, and packed in the neatest manner, and places it in the nettings before mentioned, as intended for this purpose. When these preliminary steps are gone through, and every rope is coiled up in its proper place, the sailors go to breakfast, during which the word is passed to "clean for muster," and the dress is specified according to the time of year and climate; thus, at different seasons, is heard, "Do you hear there! fore and aft! clean for muster at five bells—duck frocks and white trousers!" or "blue jackets and trousers" or "d'ye hear there! clean shirt and a shave for muster at five bells."

At half-past eight, the first watch is called; "between decks," the store rooms, and, in short every hole and corner of the vessel, is then swept and put in the nicest order; all which is accomplished by half-past ten. The mate of the decks, the mate of the hold, the boatswain, gunner, and carpenter, having previously received reports from their subordinates, that the different departments they superintend are ready; and, reports being then finally made to the first lieutenant by the mates and warrant officers, he himself goes round the ship, to see that all is ready for the grand inspection. The captain then desires the lieutenant to tell the officer immediately in command to give out the order of "beat to divisions," which is done by the drummer; and the ship's crew range themselves in a single line along both sides of the quarter-deck, the gangways, and all round the fore-castle, and in line-of-battle ships, the number being too large to be disposed on this space, they also range themselves in the same way on each side of the main-deck. The marines, under arms and in full uniform, fall in at the after-part of the quarter-deck. In each division, the men are ranged according to their rank, and each has a lieutenant at the head, who, as well as his midshipmen under him, is in full uniform: each division is then inspected by the officer in charge of it with minute attention, and a spot of tar on the trousers, or ill-mended hole in a shirt, are noticed with reproof. The medical men also pass along the lines to judge by their appearance whether the men are healthy, and to ascertain whether any signs of scurvy are beginning to show themselves. When all is ready, the captain accompanied by the lieutenant goes round, and the former looks at every man from head to foot. During this exami-

nation a pin might be heard to fall: but for the sound of the wind among the cordage, the rippling of the water round the bows, and the creaking as the ship heels over under a press of sail, she might be supposed unmanned and dismantled in Portsmouth Dock.

After going these rounds, the captain arrives at the galley, or kitchen, where he is received by the cook and his mate, who lift the lids off the coppers, that their cleanliness may be examined, and let some of the soup run out, that the captain may inspect it. In short, every part is looked into. Beyond the galley is the hospital, which is next inspected, and the captain kindly inquires into the state and wants of each patient.

The crew having taken all their clothes-bags on deck for inspection, nothing is left on the lower decks but the mess-tables, kids, and crockery of each mess. The tables, kept as white as if they were painted, are fixed by hinges at one end, to the ship's side, and are supported at the other by cords from the ceiling; against these rest the soup and grog kids of the mess, and the double row along the deck is lighted up fore and aft by a candle at each berth, preparatory to the captain's visit.

Without dwelling on the minutiae of this inspection, which would hardly be intelligible to general readers, and not very interesting to any, it is sufficient to say, that not a corner escapes the examination of the commander, in order to see that every part is in proper trim; and when this visitation is over, and the captain returns to the quarter-deck, he turns to the first lieutenant, who has gone the whole round with him, and says, "Now, sir, if you please, we will rig the church."

The quarter-deck is the place of worship. The pulpit, which is either one of the binacles, or sometimes a stand of arms, is placed in the middle and covered over with a flag, and a quantity of gun-wadding is placed on a canister of shot to make a hassock for the chaplain (or for the captain, if there be no divine on board,) to kneel on. Chairs from the captain's-cabin and ward-room are set for the officers, and the men sit on their mess-stools, or on the gun-carriages, or on capstan-bars, resting on tubs, but all in due order and subordination, and with the utmost decorum. The awnings are spread over-head, to keep off the sun, if the weather be fine; but in rainy or squally weather, the church is prepared on the main-deck, aft under the quarter-deck. A pendant is hoisted to indicate that prayers are going on, and this signal is respected by every other ship during the continuance of service.

The dinner-hour is always at noon, but on Sunday the people are left undisturbed till four o'clock, to read or recreate themselves in any way they please; but that which especially characterizes Sunday afternoon on board, is the cessation of all that noise and stir caused by the various occupations of the artificers and crew. The men either gather in groups on the deck, talking and telling stories, or fall asleep; or walk up and down the lee gangways and fore-castle. This inactivity, contrasted with the usual animated bustle on board, is a distinguishing mark of the day of rest. At half-past four, the merry pipe to supper awakens the sleepers, and the men gather together again at the mess-tables. At sun-set, the drum beats to quarters, when the men's names are called over, and their sobriety ascertained. The guns are examined, a duty never omitted, for obvious reasons, even on a Sabbath evening. Then follow the orders, "Reef topsails," "Stand by the hammocks," "Pipe down," "Roll up the cloths," "Call the watch;" and thus concludes the Seaman's Sunday.

If however the most striking scenes are presented, and the most varied reflections occasioned, by a vessel of war, yet the painful part of these are too powerful, not materially to militate against the pleasure which would be otherwise derivable from the contemplation of such a triumph of the human mind. Not so when we visit a merchantman, some one of those splendid ships, belonging to "the traffickers of the earth," of that city whose "merchants are princes," here the associations suggested by her peaceful equipment, are of none but the pleasant order. In this case, we can enjoy the honourable triumph and pride in our exertions, and can fearlessly turn in humility and thanksgiving to Him, who equally gave us the objects to enjoy, and the means for attaining them.

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